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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/542,822	04/20/2006	Roy H Hammerstedt	6077-052204	8352

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EXAMINER

BASS, DIRK R

ART UNIT	PAPER NUMBER
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1797

MAIL DATE	DELIVERY MODE
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10/07/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/542,822	Applicant(s) HAMMERSTEDT ET AL.	
	Examiner DIRK BASS	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 July 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. The amendment filed July 15, 2009 is acknowledged. Claims 1 and 6 are amended and claims 7-24 are cancelled. Claims 1-6 are pending and further considered on the merits.

Response to Amendment

2. In light of the amendment to independent claim 1, the examiner modifies the rejections set forth in the office action mailed January 16, 2009.

Claim Rejections - 35 USC § 103

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. **Claims 1-3** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hicke et al., *Journal of Membrane Science* (August 1999) (Hicke, IDS) in view of Gregor, US 4163714 (Gregor).

Regarding claim 1, Hicke discloses a method of modifying capillary pore membranes in which carboxyl groups are formed on the interior of said membranes in order to provide functional ligands which can covalently attach desired affinity groups for affinity separations (abstract and Introduction, 4th paragraph).

Based on applicants admission that the "attachment of active molecules" uses "endogenous carboxyl groups residual from initial manufacture" (last sentence, ¶ 0007), it is inherent in Hicke that the commercially available capillary-pore membrane (see **Introduction**, fourth paragraph and **Experimental**, first paragraph) has residual carboxyl groups that are capable of being modified.

Furthermore, after photografting of the capillary-pore membranes to evenly functionalize the capillary-pore membranes with carboxylic groups (see **Introduction**, fourth paragraph), it is interpreted that these additional carboxylic groups are endogenous of the final product, i.e. the functionalized capillary-pore membranes. Moreover, to the extent that these carboxyl groups are not

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endogenous, applicant has not demonstrated that any structural or compositional feature of such claimed endogenous carboxyl groups is absent in those formed in the disclosed manner.

Hicke fails to explicitly disclose that such method only uses endogenous carboxyl groups inherent within one or more transmembrane passageways.

Gregor discloses a process of modifying membrane filters in which ligands that are part of the original matrix polymer are used to further modify the membrane filters for affinity driven separation techniques (abstract, col. 1, l. 7-26, and col. 2, l. 60 – col. 3, l. 1).

At the time of invention, it would have been obvious to one skilled in the art to modify the method of Hicke with the teachings of Gregor in order to provide functional ligands which can covalently attach desired affinity groups for affinity based separations.

Regarding claims 2, Hicke in view of Gregor discloses a method wherein said alteration of said capillary-pore membrane is by attachment of one or more molecules, particles, units of matter, or combination thereof within one or more of said transmembrane passageways via covalent linkage with said endogenous carboxyl groups using any chemical procedure, thereby forming a configured separation membrane (see “sequential activation/coupling”, **Introduction**, fourth paragraph).

Regarding claim 3, Hicke in view of Gregor discloses a method wherein said endogenous carboxyl groups are modified using any chemical procedure prior to covalent attachment of one or more of molecules, particles, units of matter, or combination thereof within one or more of said transmembrane passageways using any chemical procedure, thereby forming a configured separation membrane (see “functionalized by...copolymerization of AEMA”, **Materials**, section 2.2, paragraph 1).

5. **Claims 4-6** are rejected under 35 U.S.C. 103(a) as being unpatentable over Hicke in view of Gregor as applied to claims 1-3, and further in view of Takenishi et al., US 6017742 (Takenishi).

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Regarding claims 4-5, Hicke in view of Gregor fails to disclose a method wherein a carbodiimide reaction is used to accomplish said alteration of said membrane by linkage of a molecule, particle, or unit of matter containing an amine group or thiol group with said endogenous carboxyl groups.

Takenishi discloses utilizing carbodiimide derivatives to perform a condensation reaction between carboxylic acid and an amine group or thiol group (col. 5, l. 8-11) to immobilize biologically active substances (see abstract).

At the time of the invention, it would have been obvious to one skilled in the art to combine the carbodiimide reaction of Takenishi with the method of Hicke in order to immobilize biologically active substances utilized for further separation or analysis techniques.

Regarding claim 6, Hicke fails to disclose a method wherein the endogenous carboxyl groups are reacted to form anhydrides.

Takenishi discloses carboxyl groups being reacted to form anhydrides (col. 2, l. 64-66) to immobilize biologically active substances (see abstract).

At the time of the invention, it would have been obvious to one skilled in the art to combine the formation of anhydrides step of Takenishi with the method of Hicke in order to immobilize biologically active substances utilized for further separation or analysis techniques.

Response to Arguments

6. Applicant's arguments with respect to claims 1-6 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DIRK BASS whose telephone number is (571) 270-7370. The examiner can normally be reached on Mon - Fri (9am-4pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on (571) 272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10/6/2009

/Yelena G. Gakh/
Primary Examiner, Art Unit 1797

/DRB/
Dirk R. Bass